Space Weather Forecast

Issued on Saturday, 14 May 2022 at 13:02 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: R1-R2 radio blackouts likely. Slight chance (20%) of Minor geomagnetic storm on day 3 (16th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with frequent mostly low level Common-class flares. These mainly originated from the largest and most complex region near the central meridian in the southern hemisphere, and also from a sunspot region near the northeast limb. There are three other numbered sunspot regions, and two un-numbered regions on the visible disc, the more significant of these located towards the east limb.

No Earth directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed as measured by DSCOVR at L1 has been at ambient levels, between 320-360 km/s. The total interplanetary magnetic field strength was mostly weak but trended gently upwards, becoming slightly moderate. Its important north-south component was mostly weakly southward until the early hours (UTC), before becoming largely northward pointing. Resultant geomagnetic activity was largely Quiet, with one Unsettled period observed at 13/2100-2400 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, with a chance of Moderate-class flares, and a slight chance of a Strong flare. The flare risk may trend a little higher through the period.

Solar Wind / Geomagnetic Activity: Solar winds are expected to remain slow-ambient initially, along with a largely Quiet geomagnetic activity. However a coronal hole high speed stream is expected to connect with the Earth on day 3 (16th), with winds becoming elevated on days 3 and 4. This may enhance geomagnetic activity with Unsettled to Active periods on days 3 & 4 (16th and 17th), with a chance of a G1/Minor Storm at the onset of the high speed stream (day 3 - 16th).

Energetic Particles / Solar Radiation: Solar radiation (high energy protons) are currently not expected to exceed thresholds over the next 4 days, although there is an ongoing slight risk.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	40	50	50
Very Active	R3 to R5 X	No	5	5	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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